# Exploratory Data Analysis and Business Insights

This analysis explores an ECommerce transaction dataset comprising three files:

- **Customers.csv**: Customer details including customer ID , Name, regions and signup dates.

- **Products.csv**: Product ID, product names, categories and prices.

- **Transactions.csv**: Detailed transaction records including transaction ID, dates, quantities and total value.

By performing EDA on above dataset, Various insights were observed:

1. **Top-Selling Region:** By comparing the total sales by region. It was observed that the North America is the top selling region with the total sales of 152313.40 USD. This indicates strong market potential, and expansion efforts here could yield higher revenue.

   The total sales of each region is as below:

   | Region | Total Value |
   | --- | --- |
   | South America | -219352.56 |
   | Europe | - 166254.63 |
   | North America | -152313.40 |
   | Asia | -152074.97 |
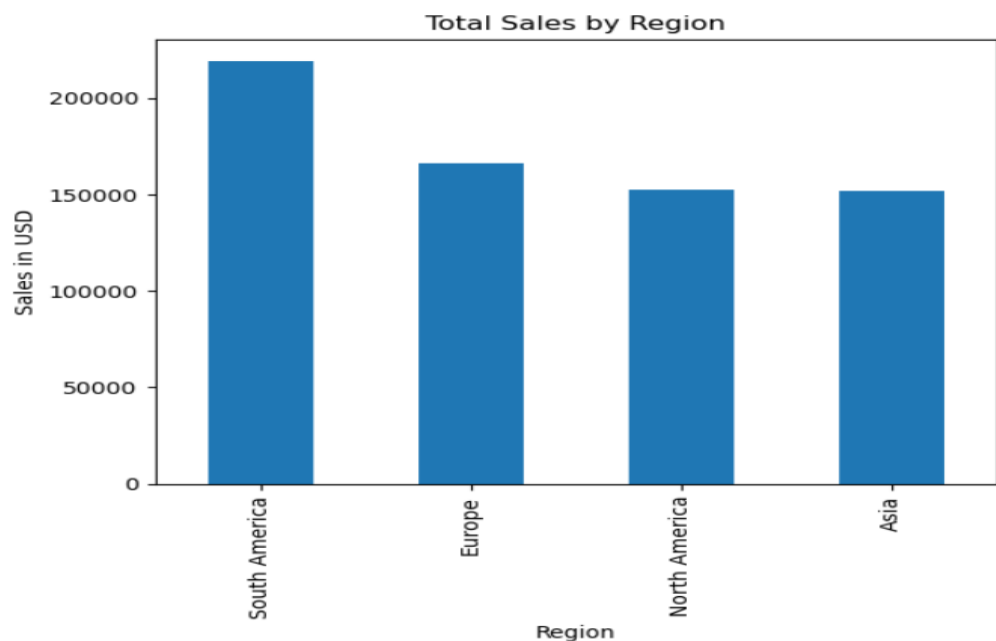
2. **Top-spending customer:** The highest spending customer is Paul Parsons from Europe region who has spent 10673.87 USD. Introducing loyalty programs for such customers could boost retention.

The top 5 spending customers are:

| CustomerName | Total Value |
|---|---|
| Paul Parsons | 10673.87 |
| Bruce Rhodes | 8040.39 |
| Gerald Hines | 7663.70 |
| William Adams | 7634.45 |
| Aimee Taylor | 7572.91 |
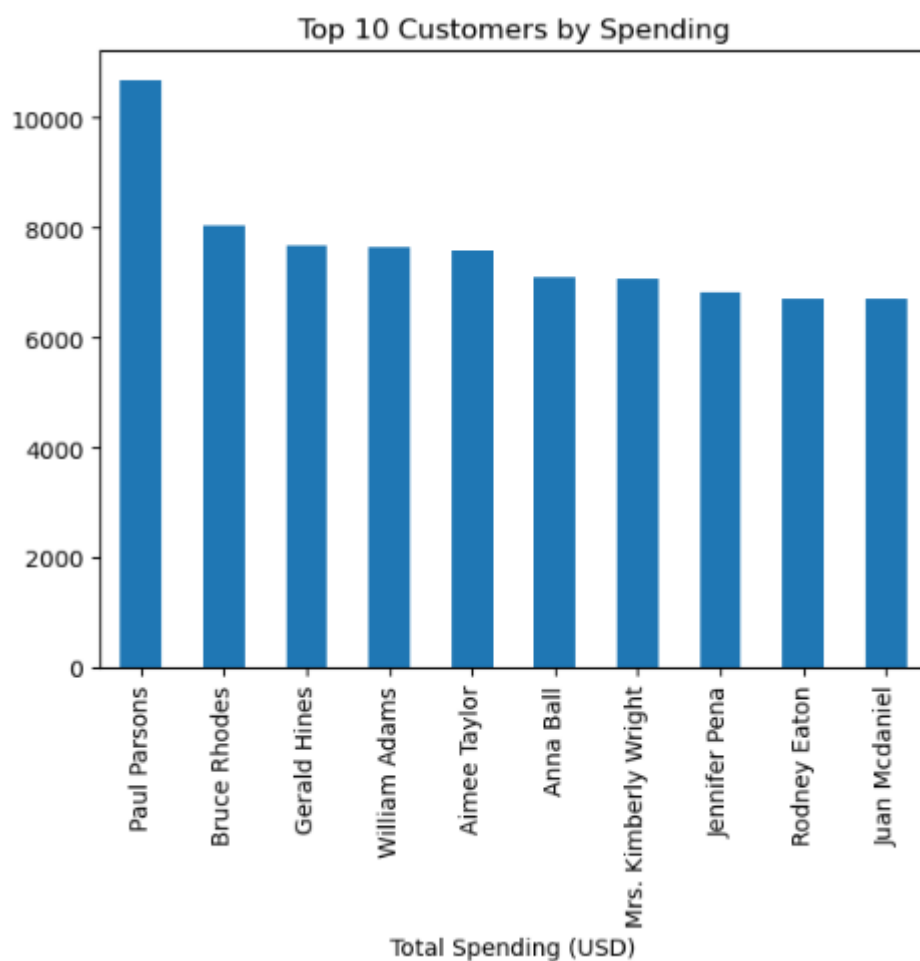


3. **Best selling product:** The best selling product is ActiveWear Smartwatch with 100 quantities sold. Promoting this product further could drive even more revenue.Mostly the top selling products belong to electronic category so, promoting products belongs to electronics can be promoted more.
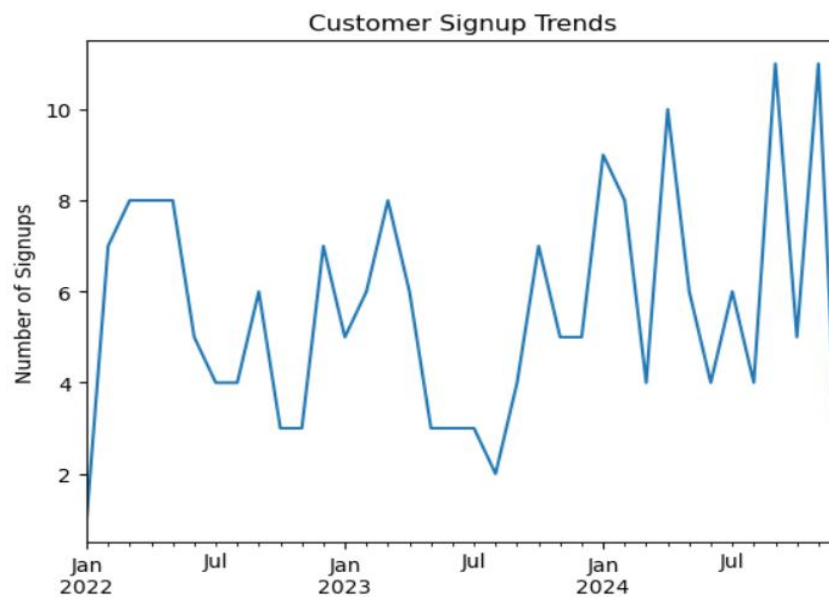
The top 5 selling products are:

| ProductName | Quantity |
|---|---|
| ActiveWear Smartwatch | 100 |
| SoundWave Headphones | 97 |
| HomeSense Desk Lamp | 81 |
| ActiveWear Rug | 79 |
| SoundWave Cookbook | 78 |
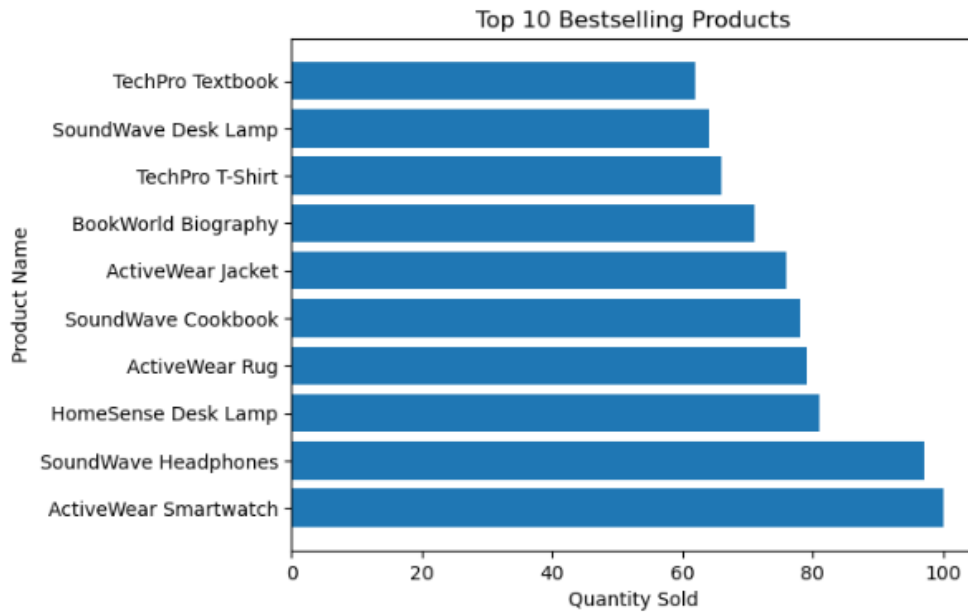


4. **Total Sales trend over time:** The sales were peaked in July 2024 with 71366.39 USD total value. Patterns like this should be leveraged for targeted promotions.
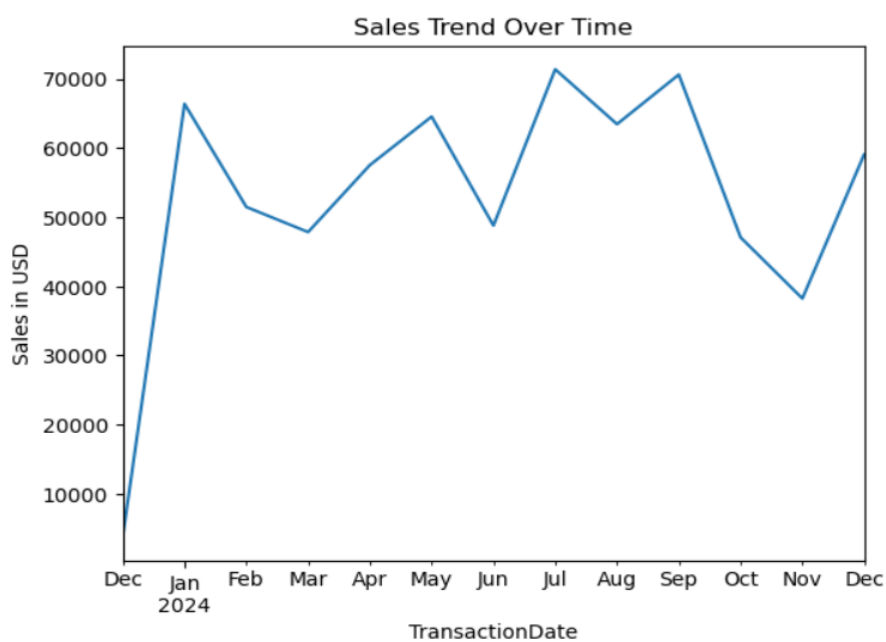
5. **Customer Growth:** Most new customers signed up in September 2024 and November 2024 with 11 signups during those months, suggesting a successful campaign or market event. Replicating such efforts could sustain growth.



This analysis reveals key trends and actionable insights for business growth:

1. Focus expansion efforts on the top-performing region.
2. Run promotional campaigns for bestselling products.
3. Leverage seasonal trends to optimize revenue during peak months.
4. Replicate strategies that drive customer signups.
5. Prioritize retention strategies for high-value customers.